

1. A chair, the chair comprising:

2 a seat support assembly, the seat support assembly including a seat support and a  
seat support frame including at least one leg assembly, the seat support frame supporting  
4 the seat support; and

a back support assembly, including a back frame and a back support, the back  
6 frame including a back frame member,

the back frame member being a single curved member having a central portion  
8 lying substantially in the plane of the back support, a left end portion, and a right end  
portion, the left and right end portions being substantially in the plane of the seat support,

10 wherein the seat support frame and the back frame are flexibly interconnected by  
a left spring and a right spring,

12 each spring being formed from an elongated non-extensible member,

wherein the left spring is connected to the left end portion of the back frame  
14 member, and the right spring is connected to the right end portion of the back frame  
member.

2. The chair of claim 1, wherein the left spring engages with a back left  
2 spring channel connected to the left end portion of the back frame member, and the right  
spring engages with a back right spring channel connected to the right end portion of the  
4 back frame member.

3. The chair of claim 1, wherein the seat support frame includes a U-shaped  
2 member having a left arm, a right arm, and a central portion, the U-shaped member lying  
substantially in the plane of the seat support, the left arm being substantially parallel to  
4 the left end portion of the back frame member, the right arm being substantially parallel  
to the right end portion of the back frame member.

4. The chair of claim 3, wherein the left arm is substantially in register with  
2 the left end portion of the back frame member, and the right arm is substantially in  
register with the right end portion of the back frame member.

5. The chair of claim 3, wherein the left spring is connected to the left arm,  
2 and the right spring is connected to the right arm.

6. The chair of claim 5, wherein the left spring engages with a front left  
2 spring channel attached to the left arm and a back left spring channel connected to the left  
end portion of the back frame member, and the right spring engages with a front right  
4 spring channel attached to the right arm and a back right spring channel connected to the  
right end portion of the back frame member.

7. The chair of claim 6, wherein each spring channel has a substantially J-  
2 shaped or U-shaped cross-sectional profile, having a first side wall, a floor, and a second  
side wall.

8. The chair of claim 7, wherein each spring channel has at least one hole in  
2 its floor so as to facilitate secure engagement with an engaged spring.

9. The chair of claim 6, wherein the left spring is substantially parallel to the  
2 left end portion of the back frame member, and the right spring is parallel to the right end  
portion of the back frame member.

10. The chair of claim 7, wherein the front left spring channel engages the left  
2 spring using a bolt passing through a front left spring keeper and a front left spring hole  
in the left spring, the bolt engaging with a tapped hole in the floor of the front left spring  
4 channel.

11. The chair of claim 7, wherein the back left spring channel engages with  
2 the left spring using a bolt passing through a back left spring keeper and a back left  
spring hole in the left spring, the bolt engaging with a tapped hole in the floor of the back  
4 left spring channel.

12. The chair of claim 6, wherein the left spring and right spring both  
2 comprise a fiberglass reinforced epoxy resin.

13. The chair of claim 6, wherein the left spring and right spring both have a  
2 substantially rectangular cross-section, the springs flexing within a plane parallel to the  
shorter sides of the substantially rectangular cross-section.

14. A chair frame, comprising:  
2 a seat support frame adapted to rest on a surface, the seat support frame having at  
least one leg assembly;  
4 a back frame member having a curved middle portion, a left end portion and a  
right end portion,  
6 a left spring, flexibly interconnecting the left end portion of the back frame  
member and the seat support frame; and  
8 a right spring, flexibly interconnecting the right end portion of the back frame  
member and the seat support frame,  
10 wherein the only mechanical connection between the left end portion and right  
end portion of the back frame member, apart from through the middle portion of the back  
12 frame member, is provided through the left spring, seat support frame, and right spring.

15. The chair frame of claim 14, wherein the left spring and the right spring  
2 are elongated and non-extensible.

16. The chair frame of claim 14, wherein the seat support frame includes a left  
2 front spring channel and a right front spring channel, the left front spring channel  
engaging the left spring, the right front spring channel engaging the right spring.

17. The chair frame of claim 16, wherein  
2 the left end portion of the back frame member is attached to a left back spring  
channel,  
4 the right end portion of the back frame member is attached to a right back spring  
channel,  
6 the left back spring channel engages the left spring, and  
the right back spring channel engages the right spring.

18. The chair frame of claim 17, wherein the left end portion and right end  
2 portion of the back frame member are at a back frame bending angle to a back support  
plane substantially defined by the curved middle portion of the back frame member.

19. The chair frame of claim 18, where the back frame bending angle is  
2 approximately 85 degrees.

20. The chair frame of claim 17, wherein the seat support frame includes a U-  
2 shaped member having a central portion, a left arm, and a right arm,  
wherein the left arm of the U-shaped member is substantially parallel to and in  
4 register with the left end portion of the back frame member,  
the right arm of the U-shaped member is substantially parallel to and in register  
6 with the right end portion of the back frame member,  
the front left spring channel is attached to the left arm of the U-shaped member,  
8 and the front right spring channel is attached to the right arm of the U-shaped  
member.

21. A chair, comprising

2 a seat support assembly including a seat support frame and a seat support, the seat  
support frame being adapted to stand on a surface so as to support the seat support at a  
4 suitable height for a person to sit on;

a back support assembly, including a back support frame and a back support  
6 attached to the back support frame; and

a pair of spaced apart springs flexibly interconnecting the seat support assembly  
8 and the back support assembly, wherein

the seat support frame provides a first seat support frame portion within the plane  
10 of the seat support,

the back support frame provides a first support frame portion within the plane of  
12 the seat support,

the first back support frame portion being substantially parallel to and in register  
14 with the first seat support frame portion, there being a first gap between the first back  
support frame portion and the first seat support frame portion, the first gap being bridged  
16 by a first front spring channel attached to the first seat support frame portion, a first back  
spring channel attached to the first back support frame portion, and a first spring engaged  
18 with the first back spring channel and the first front spring channel.

22. The chair of claim 21, wherein the first spring is an elongated bar of non-  
2 extensible resilient material.

23. The chair of claim 22, wherein the first spring has a rectangular cross  
2 section.

24. The chair of claim 22, wherein the first front spring channel and first back  
2 spring channel each provide a recess adapted to partially receive the first spring.

25. The chair of claim 24, wherein the first spring is substantially parallel to  
2 the first seat support frame portion, and laterally offset from the first seat support frame  
portion.

26. A flexible interconnection for flexibly interconnecting a seat support  
2 assembly and a back support assembly of a chair, the flexible interconnection  
comprising:

4 a pair of spaced apart front spring channels attached to the seat support assembly;  
a pair of spaced apart back spring channels attached to the back support assembly;

6 and

a pair of spaced apart springs, each spring being engaged with one back spring  
8 channel and one front spring channel,

wherein both springs are elongated, and

10 wherein each spring channel includes a first side, a second side, and a central  
portion connecting the first side and the second side, so as to define a substantially U-  
12 shaped or J-shaped cross-sectional profile defining a spring channel recess that provides  
spring engagement,

14 whereby the act of sitting on the seat support assembly and leaning back against  
the back support assembly causes the back support assembly to tilt backwards due to  
16 flexing of each spring.

27. The flexible interconnection of claim 26, wherein each spring engages  
2 with one back spring channel using a back connector, and engages with one front spring  
channel using a front connector,

4 each spring having a front hole and a back hole extending therethrough, the front  
hole receiving the front connector and the back hole receiving the back connector.

28. The flexible interconnection of claim 26, wherein each spring has a spring  
2 length and a transverse cross-section, the transverse cross-section being orthogonal to the  
spring length, each spring being elongated along the spring length.

29. The flexible interconnection of claim 28, wherein the transverse cross-  
2 section is substantially rectangular, the transverse cross-section being defined by a spring  
width and a spring thickness, the spring width being greater than the spring thickness,  
4 wherein flexing of each spring is in a flexing plane containing the spring length  
and spring thickness.

30. The flexible interconnection of claim 28, wherein at least part of the  
2 transverse cross-section is adapted to be received by the substantially U-shaped or J-  
shaped cross-sectional profile of each spring channel.

31. The flexible interconnection of claim 28, wherein the spring length is  
2 greater than 5 inches, the spring width is approximately 2 inches, and the spring thickness  
is approximately 0.3 inches.

32. The flexible interconnection of claim 28, wherein each spring comprises  
2 fiberglass reinforced epoxy resin.

33. The flexible interconnection of claim 28, wherein each spring channel  
2 provides a recess having a recess cross-section that is substantially complementary to at  
least part of the transverse cross-section of each spring.

34. A chair, having a left side, a right side, a front side, a back, a seat support  
2 supporting a seat of a person, and a back support supporting a back of the person, the  
chair comprising:

4 a seat support assembly, including

6 a left leg assembly, having a curved left leg member, the curved  
left leg member having a front left leg portion, a back left leg portion, and  
8 a central portion connecting the front left leg portion and the back left leg  
portion;

10 a right leg assembly, having a curved right leg member, the curved  
right leg member having a front right leg portion, a back right leg portion,  
and a central portion connecting the front right leg portion and the back  
12 right leg portion;

14 a U-shaped member, having a middle portion, a left arm having a  
left arm end, and a right arm having a right arm end, wherein the left arm  
is attached to the central portion of the left leg member and the right arm  
16 is attached to the central portion of the right leg member so that the  
middle portion acts to connect the left leg member and the right leg  
18 member, and further wherein the U-shaped member substantially defines  
the plane of the seat support, the seat support being supported by the U-  
20 shaped member, and wherein the middle portion of the U-shaped member  
is proximate to the front of the chair so that the left arm end and the right  
22 arm end are proximate to the back of the chair,

24 a front left spring channel, attached to the left arm of the U-shaped  
member proximate to the left arm end;

26 a front right spring channel, attached to the right arm of the U-  
shaped member proximate to the right arm end;

a back support assembly, including

28 a back frame formed from a single curved back frame member, the  
curved back member having a back left frame end and a back right frame  
30 end,



32                   a back left spring channel, attached to back frame member  
                  proximate to the back left frame end,  
                  a back right spring channel, attached to the back frame member  
34                   proximate to the back right frame end;  
                  a left spring, connected to the front left spring channel and the back left  
36                   spring channel; and  
                  a right spring, connected to the front right spring channel and the back  
38                   right spring channel;  
                  wherein the left spring and right spring act to connect the back frame  
40                   member to the seat support assembly, the left spring and the right spring allowing  
                  the back frame member to flex in relation to the seat support assembly.

35.     The chair of claim 34, further comprising:  
2                   a front lateral bar connecting the front left leg portion of the left leg member and  
                  the front right leg portion of the right leg member;  
4                   a back lateral bar connecting the back left leg portion of the left leg member and  
                  the back right leg portion of the right leg member;  
6                   a left leg strengthening bar connecting the front left leg portion and the back left  
                  leg portion of the left leg member; and  
8                   a right leg strengthening bar connecting the front right leg portion and the back  
                  right leg portion of the right leg member.

36.     The chair of claim 34, wherein the left spring and the right spring each  
2                   comprise a non-woven fiberglass reinforced epoxy resin material.

37.     A chair, comprising  
2                   a seat support assembly including a seat support and a seat support frame, the seat  
                  support frame supporting the seat support;

- 4           a back support assembly;  
          a flexible interconnection between the seat support assembly and the back support  
6   assembly,  
          wherein the seat support comprises a central support region and at least one  
8   corner piece, the corner piece being flexibly attached to the central support region.

38.   The chair of claim 37, wherein the flexible interconnection between the  
2   seat support assembly and the back support assembly comprises a left spring and a right  
     spring, the left and right springs being spaced apart.

39.   The chair of claim 37, wherein the corner piece is flexibly attached to the  
2   central support region using flexible plastic.

40.   The chair of claim 37, wherein the seat support comprises a central  
2   support region, a back left corner piece, and a back right corner piece,  
      wherein the back left corner piece and back right corner piece are each flexibly  
4   attached to the central support region,  
      the back left corner piece being proximate to the back assembly and a left side of  
6   the chair, the back right corner piece being proximate to the back assembly and a right  
     side of the chair.

41.   The chair of claim 40, wherein the seat support includes a cushioned layer,  
2   the cushioned layer being supported by the central support region, the back left corner  
     piece, and the back right corner piece,  
4       wherein the cushioned layer is partially deformable by flexing of the back left  
     corner piece or of the back right corner piece with respect to the central support region.

2        42.     The chair of claim 40, wherein the central support region and corner  
pieces are formed from a rigid material.

2        43.     The chair of claim 40,  
wherein the flexible interconnection between the seat support assembly and the  
back support assembly comprises a left spring and a right spring, the left and right springs  
4     being spaced apart,

wherein the back left corner piece is proximate to the left spring, and the back  
6     right corner piece is proximate to the right spring,

whereby the danger of pinching between the seat support and another proximate  
8     part of the chair is reduced.